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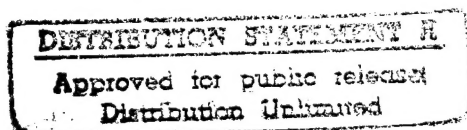
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ONR Phase I SBIR
"Active Sonar Target Imaging and Classification System"
Topic N94-142

Monthly Progress Report for April 1995

28 April 1995

Contract No. N00014-95-C-0173

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I. PROGRESS MADE DURING PERIOD COVERED; PROBLEMS ENCOUNTERED; RECOMMENDATIONS

This contract officially started on 1 April 1995. To date, we have accomplished the following items under this contract:

1. The SCAT model has been obtained from Dr. James Simmons of Brown University.

2. The SCAT model has been installed on a Gateway 90-MHz Pentium PC and is currently up and running.

3. Initial efforts to become familiar with the SCAT model and its adjustable parameters have begun. Several test signals have been generated for processing. Discussions have been held with Prestor Saillant, the programmer of the SCAT model, with regard to appropriate parameter settings and ranges.

4. An Acoustic Backscatter Data Base has been obtained from Mr. Gerry Dobeck of Naval Coastal Systems Station. This data base consists of 147 files describing the aspect dependence of echoes from a target of interest and an irregular concrete object. We have software available to allow display of these signals.

5. We are also in the process of obtaining from ORINCON's San Diego office an analog tape of echoes from several suspended mine-like objects. These data were collected using an Ametek-Strazza high frequency sonar.

6. An initial review of Adaptive Resonance Theory (ART) technical literature has begun. We hope to use this neural net architecture as a possible classifier.

The only problem that has been identified to date is the need for a DD-254 form to allow for classified processing. Several of the data sets held by Raytheon involve echoes from actual mines of different types obtained using operational Navy sonars. We are currently in the process of obtaining the necessary DD-254.

II. RESULTS RELATED TO PREVIOUSLY IDENTIFIED PROBLEM AREAS

No problem areas have been previously identified.

III. WORK PLANNED FOR NEXT REPORTING PERIOD

The following efforts are currently planed for May:

1. Issuance of a subcontract to Raytheon.

2. An initial meeting with Raytheon to discuss their BASS model, their data sets, and the planned efforts and priorities under the VLSI feasibility study.

3. Processing of a small number of Naval Coastal Systems Station Acoustic Backscatter Data Base echoes through SCAT, ORINCON's mustached bat model, standard matched filtering, and hopefully, the Raytheon BASS model.

4. Kick-off of the VLSI feasibility study.

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5. Discussions with Dr. Steven Grossberg in an attempt to obtain a copy of the ART2 and fuzzy ART software for use as a classifier.

6. Finalization of a DD-254 allowing processing of classified data.

IV.   TRIP REPORTS

None.

V.   AUTHENTICATION

This report was prepared by James G. Weber.

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